

AMENDMENT(S) TO THE CLAIMS

1. (Currently amended) A method for aligning first and second sets of wide-bandwidth, high-resolution data at a low resolution data, each of the first and second sets of data including first and second subsets of data aligned with respect to each other, each first subset of data having a first resolution and each second subset of data having a second resolution that is lower than the first resolution, the method comprising the steps of:

computing a magnitude-only spectrogram for each of the first subsets of data of the first and second sets of high resolution data, using a spectrogram slice length that is appropriate for the stationarity characteristics of the first subsets of data of the first and second sets of high resolution data and a spectrogram step size that is appropriate for the quantization period of the final alignment;

computing a one-dimensional cross-correlation of the magnitude-only spectrograms for the first subsets of data of the first and second sets of data; and

selecting an alignment of the first subsets of data, and, consequently, the first and second sets of data, at the second resolution, based on the cross-correlation.

2. (Original) A method as in Claim 1, wherein the spectrogram slice length and step size are 1/29.97 sec.

3. (Original) A method as in Claim 1, wherein the step of computing a one-dimensional cross-correlation further comprises performing a FFT-based one-dimensional convolution method.

4. (Currently amended) A method for selecting for cross-correlation a distinctive audio segment from a set of audio data, comprising the steps of:

computing the audio energy in a first time window corresponding to a first audio segment;

computing the audio energy in a second time window corresponding to a second audio segment that includes the first audio segment;

determining whether the audio energy in the first time window exceeds a specified first threshold; and

determining whether the variance of audio energy in the second time window exceeds a specified second threshold, wherein the first audio segment is selected as a distinctive audio segment if the first and second thresholds are exceeded.

5. (New) A method as in Claim 4, wherein:

the first time window is 0.125 seconds; and

the second time window is 1 second.

6. (New) A method as in Claim 4, wherein:
the first threshold is a multiple of the global mean
energy; and
the second threshold is a multiple of the square of the
global mean energy.

7. (New) A method as in Claim 6, wherein:
the first threshold is 0.3 times the global mean
energy; and
the second threshold is 0.1 times the square of the
global mean energy.

8. (New) A method as in Claim 6, wherein the global mean
energy is calculated over the entire set of audio data.

9. (New) A method as in Claim 6, further comprising the
steps of:

comparing the global mean energy to the square of the
global mean energy; and
increasing the value of the global mean energy if the
global mean energy is less than the square of the global
mean energy.

10. (New) A method as in Claim 4, wherein the duration of
the first time window is a multiple of a specified granularity of
alignment of the set of audio data with another set of audio
data.

11. (New) A method for aligning a first set of data representing content occurring over a period of time with a second set of data representing content occurring over a period of time, each of the first and second sets of data including audio data, comprising the steps of:

selecting a distinctive audio segment from the audio data of the first set of data, wherein the step of selecting comprises the steps of:

evaluating each of a plurality of audio segments from the audio data of the first set of data; and

identifying one of the plurality of audio segments, based on the evaluation of each of the plurality of audio segments, as the distinctive audio segment; and

computing cross-correlation between the distinctive audio segment from the audio data of the first set of data and the audio data of the second set of data; and

aligning the first and second sets of data based on the cross-correlation.

12. (New) A method as in Claim 11, wherein the step of evaluating comprises, for each of the plurality of audio segments, evaluating the audio energy of the audio segment.

13. (New) A method as in Claim 12, wherein:
the step of evaluating the audio energy of the audio
segment comprises the steps of:
computing the audio energy of the audio segment;
computing the audio energy of a surrounding audio
segment that includes the audio segment;
determining whether the audio energy of the audio
segment exceeds a first threshold; and
determining whether the variance of audio energy
in the surrounding audio segment exceeds a second
threshold; and
the step of identifying comprises the step of
identifying as the distinctive audio segment one of the
plurality of audio segments for which the first and second
thresholds are exceeded.

14. (New) A method as in Claim 11, wherein each of the
first and second sets of data further include video data.

15. (New) A method as in Claim 11, wherein each of the
first and second sets of data further include metadata.

16. (New) A method as in Claim 11, further comprising the step of selecting a distinctive audio segment from the audio data of the second set of data, wherein the step of selecting a distinctive audio segment from the audio data of the second set of data comprises the steps of evaluating each of a plurality of audio segments from the audio data of the second set of data and identifying one of the plurality of audio segments from the audio data of the second set of data, based on the evaluation of each of the plurality of audio segments from the audio data of the second set of data, as the distinctive audio segment from the audio data of the second set of data, and wherein the step of computing cross-correlation comprises computing cross-correlation between the distinctive audio segment from the audio data of the first set of data and the distinctive audio segment from the audio data of the second set of data.

17. (New) A method as in Claim 1, wherein:

the first subset of data of the first and second sets of data comprises audio data; and

the second subset of data of the first and second sets of data comprises visual data.

18. (New) A method as in Claim 17, wherein the second resolution is a video frame rate.